Title

[G-2] graph twoway lowess — Local linear smooth plots

Syntax

```
twoway lowess yvar xvar [if] [in] [, options]
```

options	Description
bwidth(#)	smoothing parameter
mean	use running-mean smoothing
noweight	use unweighted smoothing
logit	transform the smooth to logits
adjust	adjust smooth's mean to equal *yvar*'s mean
cline_options	change look of the line
axis_choice_options	associate plot with alternative axis
twoway_options	titles, legends, axes, added lines and text, by, regions, name, aspect ratio, etc.

See [G-3] ***cline_options***, [G-3] ***axis_choice_options***, and [G-3] ***twoway_options***.

Menu

Graphics > Twoway graph (scatter, line, etc.)

Description

`graph twoway lowess` plots a lowess smooth of *yvar* on *xvar* using `graph twoway line`; see [G-2] **graph twoway line**.

Options

`bwidth(#)` specifies the bandwidth. `bwidth(.8)` is the default. Centered subsets of *N**`bwidth()` observations, *N* = number of observations, are used for calculating smoothed values for each point in the data except for endpoints, where smaller, uncentered subsets are used. The greater the `bwidth()`, the greater the smoothing.

`mean` specifies running-mean smoothing; the default is running-line least-squares smoothing.

`noweight` prevents the use of Cleveland's (1979) tricube weighting function; the default is to use the weighting function.

`logit` transforms the smoothed *yvar* into logits.

`adjust` adjusts by multiplication the mean of the smoothed *yvar* to equal the mean of *yvar*. This is useful when smoothing binary (0/1) data.

cline_options specify how the lowess line is rendered and its appearance; see [G-3] ***cline_options***.

axis_choice_options associate the plot with a particular y or x axis on the graph; see [G-3] ***axis_choice_options***.

twoway_options are a set of common options supported by all `twoway` graphs. These options allow you to title graphs, name graphs, control axes and legends, add lines and text, set aspect ratios, create graphs over `by()` groups, and change some advanced settings. See [G-3] ***twoway_options***.

Remarks and examples

`graph twoway lowess` *yvar xvar* uses the `lowess` command—see [R] **lowess**—to obtain a local linear smooth of *yvar* on *xvar* and uses `graph twoway line` to plot the result.

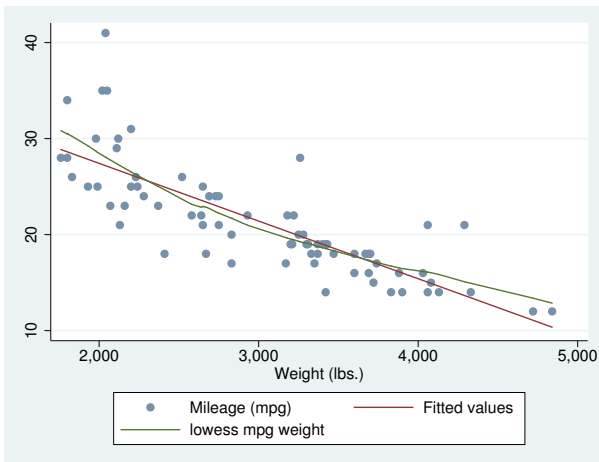
Remarks are presented under the following headings:

Typical use
Use with by( )

Typical use

The local linear smooth is often graphed on top of the data, possibly with other regression lines:

```
. use http://www.stata-press.com/data/r13/auto
(1978 Automobile Data)
. twoway scatter mpg weight, mcolor(*.6) ||
         lfit    mpg weight    ||
         lowess  mpg weight
```



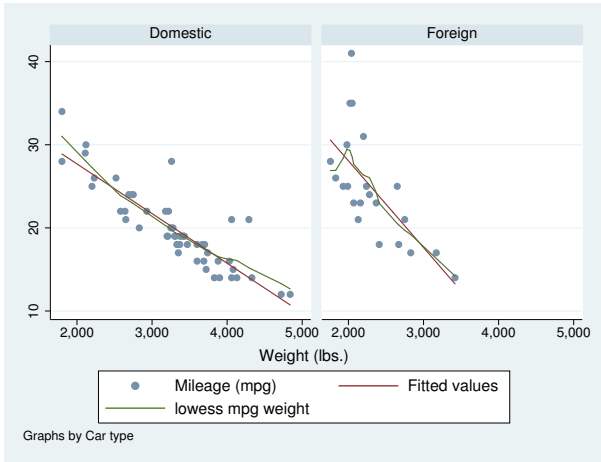
Notice our use of `mcolor(*.6)` to dim the points and thus make the lines stand out; see [G-4] ***colorstyle***.

Notice also the y-axis title: "Mileage (mpg)/Fitted values/lowess mpg weight". The "Fitted values" was contributed by `twoway lfit` and "lowess mpg weight" by `twoway lowess`. When you overlay graphs, you nearly always need to respecify the axis titles using the *axis_title_options* `ytitle()` and `xtitle()`; see [G-3] ***axis_title_options***.

Use with by()

`graph twoway lowess` may be used with `by()`:

```
. use http://www.stata-press.com/data/r13/auto, clear
(1978 Automobile Data)
. twoway scatter mpg weight, mcolor(*.6) ||
         lfit    mpg weight ||
         lowess  mpg weight ||, by(foreign)
```



References

Cleveland, W. S. 1979. Robust locally weighted regression and smoothing scatterplots. *Journal of the American Statistical Association* 74: 829–836.

Cox, N. J. 2005. Speaking Stata: Smoothing in various directions. *Stata Journal* 5: 574–593.

——. 2010. Software Updates: Speaking Stata: Smoothing in various directions. *Stata Journal* 10: 164.

Royston, P., and N. J. Cox. 2005. A multivariable scatterplot smoother. *Stata Journal* 5: 405–412.

Also see

[R] **lowess** — Lowess smoothing

[G-2] **graph twoway mspline** — Twoway median-spline plots